

unwary to think that Dr. Vignon has established his case. As his work professes, however, to be an *étude scientifique*, and as he unhesitatingly lays down the conclusion that the shroud is the real article (Popes, Bishops and Jesuits notwithstanding) and that the image is a "vaporograph" produced in the manner described, it is of considerable importance that his evidence should be critically considered.

In order to clear the ground, we will make a most liberal advance in Dr. Vignon's favour and concede for the sake of argument that such ammoniacal vapours may be emitted as required by hypothesis, and further, that the shroud may have been impregnated with some sensitive colouring-matter or colour generator capable of receiving an impression in three days. What kind of impression could be expected in these circumstances? Stretching the hypothesis to its utmost limit, certainly only a blurred human figure in outline. Now look at the image on the shroud; features with a recognisable expression, hair in detail and (as per description) blood stains, wounds and stripes. Surely, as the author himself says (p. 43), "There is no limit to hypothetical ingenuity."

A scientific witness must, however—whether his hypothesis be reasonable or otherwise—be expected to give some substantial evidence for a hypothetical belief, and the more unlikely the hypothesis, *a priori*, the stronger must that evidence be. Here is what Dr. Vignon has to offer:—

"We took the plaster cast of a hand and covered it with a glove of suède kid. We then poured some of the ammoniacal solution (ammonium carbonate in water) along the wrist so that it penetrated the plaster without completely saturating the glove. The vapours were given off very regularly through the pores of the kid without staining the linen by too much water or letting the oil penetrate the damp glove.

"Working in this way we got an excellent impression of the back of the hand (on linen impregnated with olive oil and aloes). The tips of the fingers have the square aspect due to the glove having been too long. On the inside of the thumb the seams of the glove are plainly to be seen, while on the outside the image fades away rapidly and regularly. *The print is sufficiently definite to show the likeness of a finger, but too diffuse to mark the actual outlines, and this may be said of all the fingers.* (Italics ours. Compare with the hands on the figure on the shroud where the fingers are distinct.) . . .

"The print which we have obtained of this hand justifies us in asserting that under special conditions ammoniacal vapours may produce as distinct impressions of an object as those shown on the Holy Shroud" (p. 167).

Dr. Vignon's scientific conscience must really be very easily satisfied. This is the only scrap of experimental support that he furnishes. No illustration of the "vaporographed" hand is given. It is confessed that the experiment is so delicate that an attempt to repeat it gave a worse result than the first. A plaster bust of Michael Angelo refused to furnish any recognisable impression. Yet with these inconclusive results, the author virtually claims to have settled the whole history and origin of the relic. Just when he comes to the very point where scientific evidence becomes possible, he meets with what appears to the reviewer to be a failure, and then naively remarks:—

"We shall continue these experiments if desirable, though

they only present a limited interest" (p. 167). The magnitude of the conclusions based on such lame experimental evidence justifies the condemnation of the whole work as an *étude scientifique*. To the reviewer, it reads like an antiquarian dissertation ending in a pseudo-scientific anti-climax. The conditions required by the hypothesis are not difficult to realise experimentally. There are many organic colouring-matters sensitive to ammonia gas. The fever hospitals would surely furnish the author with subjects for experiment if inanimate models of the human figure are considered unsatisfactory. If by ammoniacal or any other vaporous emanation Dr. Vignon can succeed in producing an impression as distinctly recognisable as a likeness as the image on the shroud in all its details, we will waive the question of twenty centuries' permanence and go so far as to admit that there is at any rate some justification for "vaporographic" portraiture. As the "explanation" stands now, it is purely in the region of hypothesis, and pending that rigorous verification required by science, we consider that the author's case is "not proven." If there are any scientific readers who are convinced that the conclusions in this work are satisfactorily established, we shall be disposed to credit the shroud with having wrought a greater miracle than was ever ascribed to it by the Chapter of Lirey in the fourteenth century.

R. MELDOIA.

IRISH FOLKLORE.

Traces of the Elder Faiths of Ireland. A Folklore Sketch. By W. G. Woods-Martin, M.R.I.A. Vol. i., pp. xix + 405; vol. ii., pp. xv + 438. (London: Longmans and Co., 1902.) Price 30s. net.

"MANY readers may have read works treating of some one or more epochs included in the past of which Ireland has been the scene, but up to the present," says the author, "this lengthened period has not been treated as a whole." Such a complaint can no longer be made after the publication of this able and comprehensive work, which is, as its second title indicates, "A Handbook of Irish Pre-Christian Traditions."

The consideration of the main subject of the book, the faiths of Ireland, is preceded by about 120 pages of introductory matter concerning the geographical shape of the island, the Great Ice Age and the nature of the earliest inhabitants. Excellent illustrations are given of the effects of the Great Ice Age in moulding the sides of the hills, &c. In the enumeration of the various theories as to the causes of the Ice Age, a suggestion is made as to the significance of the sun being a variable star. This fact may possibly explain the whole mystery. Though not often mentioned by the theorists, namely by those who are in favour of Sir C. Lyell's geographical explanations or of Croll's astronomical arguments based on the variability in the shape of the earth's orbit, it cannot have been outside their views. If, for instance, it be true that, in the time of Ptolemy, α Geminorum (*Castor*) was the brighter, and, therefore, presumably the hotter, star than β (Pollux), we may suppose that the inhabitants of the planetary dependents of the former are now experiencing a glacial or those of the latter a torrid epoch.

Ireland seems to have been the home of the gigantic

deer, their increase being explained by the total absence of lions from the island.

The earliest inhabitants of the country migrated, it would seem, from the south-west of Scotland into Ulster. According to the author, the fact that the skulls of these early inhabitants are often rather larger than those of the average of the masses inhabiting the great cities of the present day is explained by the intelligence needed for defence and for the procuring of food.

"Indeed, on the principle of the survival of the fittest, it could only be the robust who lived through the hardships and climatic exposure incidental to a savage life."

The author, in his summary, admits the theory of evolution, though under the direction of the Great First Cause.

Even as late as the time of the Spanish Armada, the inhabitants of Ireland were described as follows by Captain Cuella, who escaped from one of the wrecks off the Irish coast:—

"They live in huts made of straw. The men have big bodies, their features and limbs are well made and they are as agile as deer. They eat but one meal a day, and their ordinary food is oaten bread and butter. They drink sour milk, as they have no other beverage, but no water, although it is the best in the world. They dress in tight breeches and goatskin jackets, cut short, but very big, and wear their hair down to their eyes."

It is not surprising that such a race should entertain the curious ideas so abundantly described in the author's pages.

Nowhere in Ireland has discovery as yet been made of any Palæolithic art like the extraordinary and life-like incised sketches of men and animals made by the cave-men of Gaul. No representations of human or animal forms seem to have been made prior to the introduction of Christianity. Even then, they were of an arabesque character and subsidiary to the scroll work in which they were entwined. Nor does iron appear to have been introduced into Ireland until the fourth century, A.D.

It is difficult to fix the point where real Irish history commences. An interesting map of Ireland according to Ptolemaic geography is reproduced on p. 230. There is said to have been no Roman colonisation, though Roman objects were, of course, imported. An illustration is given (p. 237) of a Roman medicine stamp of smooth grey slate found in the county Tipperary. It was probably used to stamp a "patent medicine" made and sold by the Romano-Hibernian dealer whose name it bears.

In the chapter which deals with stone worship, there seems to be so little, so far as Megalithic remains are concerned, which can be illustrated from Ireland that the chief example has to be drawn from Carnac, in Brittany. One circle of stones, indeed, is introduced, named the Druids' circle, near Killiney, which consists of seven small stones and two uprights large enough to be called *giants*. There are no data, however, given from which the age of the work, as in some of the Megalithic circles in Great Britain, could be investigated, and there is only one instance, and that a doubtful one, of anything of the nature of the alignments in Brittany which can also to some extent be interpreted astronomically; but there are numerous and very curious examples of per-

forated stones which have been employed even in comparatively recent times for passing children through in hopes of curing them from various disorders. These holes, in some instances, are large enough to allow grown-up people to creep through them, though generally with difficulty. Sometimes the holes were only large enough to admit the arm, or even the thumb and fingers, to be passed through them. Marriage contracts, it is said, are still ratified in this way, country couples signifying betrothal by clasping hands through the hole. Such practices, it is shown, were not confined to Ireland, but the evidences seem to be very greatly multiplied in that country. The history is given of the *Stone of Destiny*, as it was called, which is now placed under the Coronation Chair in Westminster Abbey. This supposed magic stone, which roared like a lion when a legitimate king stood upon it, was, it is alleged, sent to Scotland in the ninth century in order to secure the then dynasty on the throne. It was preserved with great care at Scone, in Perthshire, until 1296, when it was carried off by Edward I. of England.

Lovers of folklore will find in this book abundant illustrations of that subject, and among them many examples of prehistoric practices surviving into recent and even modern times.

MIGRATORY LOCUSTS.

Die Wanderheuschrecken und ihre Bekämpfung in unseren afrikanischen Kolonien. Von Dr. L. Sander. Pp. 544. (Berlin: Reimer, 1902.) Price 9 marks.

AFRICA has always been exposed to the ravages of migratory locusts, the fringe of cultivation on the borders of extensive deserts or wildernesses being peculiarly favourable to their attacks; and this applies more especially to the north and south of the continent. Dr. Sander's volume is a carefully compiled account of their ravages in the German colonies of Africa during the last ten or twelve years, for though travellers and missionaries have left us accounts of earlier invasions, yet the first disastrous appearance of locusts in East Africa since the German occupation was in the years 1894 and 1895, when a serious famine was the result. A graphic account is given by a native of Pangani, from which we may extract and condense a few sentences:—

"In December there came vast swarms, so that the heavens were covered by them, as if with black clouds. The locusts have devoured everything in the country, especially lentils, peas and bananas. We are in a sad state here, for they have devoured the whole harvest, and it will take years to repair the damage. First we must dig over the whole country, for the locusts have devoured everything, root and branch. Second, we must buy fresh seed, and that will cost much money. Third, we must buy our food from the traders for the present, for we have nothing left to live upon. The locusts have been here in vast swarms since November and December, and have not yet retired. We have the black and yellow ones here, and red ones too. Our largest landowners and sugar manufacturers have removed to Pangani because their plantations lie wasted. Each of these gentlemen has hundreds of workmen to provide for. For the present, there is no thought of the retreat of the creatures. I tell you that when a swarm comes, we can often scarcely see the sun. The locusts